

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

DRAFT

Conditional Major, Operating

Permit: F-07-037

Ken Dec Inc.

Horse Cave, KY 42749

December 12, 2008

Mark Labhart, Reviewer

SOURCE ID: 21-099-00018

AGENCY INTEREST: 1780

ACTIVITY: APE20070001

SOURCE DESCRIPTION:

Operations at Ken-Dec facility include zinc die-casting and electroplating (copper, nickel and chrome). Ken-Dec's chromium electroplating facility consists of three (3) separate electroplating lines. Other activities at the facility consist of nonferrous foundry, polishing, titanium die castings, beryllium die castings, precious metal die castings, and copper die castings. There are aluminum die casting units present at the facility; however, they have been idle. There are also three natural gas fired boilers and two natural gas fired drying ovens.

Ken-Dec has been operating under permits S-95-252, S-95-253 Revised, S-96-152, and O-86-19. In January 22, 2001 Ken-Dec submitted a letter to the Division requesting a permit renewal. In June 5, 2007 Ken-Dec submitted a revised permit renewal application to the Division. Since emissions of particulate matter (PM₁₀) are greater than the TV threshold (100 tons per year), Ken-Dec has requested voluntary regulated pollutant emission limitations for this approval to be issued as a source wide Conditional Major permit pursuant to 401 KAR 52:030. This permit will be issued as the initial Conditional Major for the source.

COMMENTS:

The following table summarizes changes that have occurred since the issuance of previous permits, as specified by the applicant during this permit review.

Changes Made to Facility Since Issuance of State Origin Permit

Permit Emission Point Description and Emission Point # Changes:

Emission Sources Listed Under Permits O-86-19, S-95-252, S-95-253 Revised, and S-96-152			Emission Sources As They Exist Today			Explanation of Change
Permit	EP #	EP Description	EP #	Stack ID	EP Description	
O-86-19	12(1)	Boiler (Cleaver Brooks-125 HP Gas-Fired, Model CB700-125)	EP1	S01	Cleaver Brooks Boiler Primary Plating Boiler	New EP number assigned
O-86-19	12(1)	Boiler (Orr & Simbower-Model PFIG, Design 150-5, Serial #66 100 74)	EP2	S02	Orr & Simbower Boiler Backup Plating Boiler	New EP number assigned
---			EP3	S03	Rite Boiler - Waste Water Treatment Boiler	Not Listed in previous permits
S-96-152	07(07)	Buffer/Grinder (Small Baghouse)	EP4	Dust Bags	No change in description	New EP number assigned

S-96-152	08(08)	Buffer/Grinder (Large Baghouse)	EP5	Dust Bags	No change in description	New EP number assigned
O-86-19, S-95-252	06(15)	Spray Booth (Dual)	EP6	S04	No change in description	New EP number assigned
O-86-19, S-95-252	07(16)	Spray Booth (Dual)	EP7	S05	No change in description	New EP number assigned
O-86-19, S-95-252	10(21)	Auto Spray Booth (Dual)	EP8	S06	Manual Spray Booth	New EP number assigned
O-86-19, S-95-252	09(18)	Auto Spray Booth (3x)	EP9	S07	No change in description	New EP number assigned
S-95-252	29(29)	Paint Shield Wash Unit	EP10	S08	No change in description	Not Listed in previous permits
O-86-19, S-95-252	11(19)	Spray Booth (Dual)	EP11	S09	No change in description	New EP No. assigned
S-95-253 Revised	01(02)	Zn Die Cast #1	EP12	S10	No change in description	New EP No. assigned
S-95-253 Revised	01(02)	Zn Die Cast #2	EP13	S11	No change in description	New EP No. assigned
S-95-253 Revised	01(02)	Zn Die Cast #3	EP14	S12	No change in description	New EP No. assigned
S-95-253 Revised	01(02)	Zn Die Cast #4	EP15	S13	No change in description	New EP No. assigned
---			EP16	S14	Zn Die Cast #5	Not Listed in previous permits
S-95-253 Revised	01(02)	Zn Re-Melt	EP17	S15	No change in description	New EP No. assigned
S-95-253 Revised	---	Zn Die Cast Flux	EP18	S10-S15	No change in description	Emissions accounted for under Eps 12, 13, 14, 15, 16, and 17
S-95-253 Revised	---	Zn Die Cast Combustion	EP19	S10-S15	No change in description	Emissions accounted for under Eps 12, 13, 14, 15, 16, and 18
---	Not Listed	Drying Oven #1 - Washer Oven	EP20	S16	No change in description	Not Listed in previous permits
---	Not Listed	Drying Oven #2 - Paint Room Oven	EP21	S17	No change in description	Not Listed in previous permits
---	New	Robotic Buffer/Grinder-A	EP22	Dust Bags	No change in description	New Process, installed in 2007
---	New	Robotic Buffer/Grinder-B	EP23	Dust Bags	No change in description	New Process, installed in 2007
C-92-160	03 & 019	Plating - Tanks 6-12 (Copper Plating (#9, #10) Acid Salt #7)	EP24	S18	No change in description	New EP No. assigned
C-92-160	04	Plating - Tanks 13-15 (Acid Copper #17)	EP25	S19	No change in description	New EP No. assigned
C-92-160	16-18 & 05	Plating - Tanks 16-19 (Semi-Nickel Plating (#23) Nickel Plating #24, #25)	EP26	S20	No change in description	New EP No. assigned
C-92-160		Plating - Tanks 20-22	EP27	S21	No change in description	New EP No. assigned
C-92-160		Plating - Tanks 23-25	EP28	S22	No change in description	New EP No. assigned
C-92-160		Plating - Tanks 26-28	EP29	S23	No change in description	New EP No. assigned

C-92-160	02	Plating - Tanks 1-5 & 29-34 (Chrome Tanks #29 & #30)	EP30	S24	No change in description	Chrome Tanks (#29 & #30)
---		Re-Chrome - Tanks 1-5 (Strip & Acid Dip)	EP31	S25	No change in description	
---		Re-Chrome - Tanks 6-12 (Re-Chrome Plating and Rinse Chrome Tank)	EP32	S24	No change in description	Re-Chrome Plating and Rinse Chrome Tank (#32)
---	EIS023	Aluminum Die Cast #1	EP33	S26	No change in description	New Process, installed in 2003
---	EIS023	Aluminum Re-Melt	EP34	S26	No change in description	New Process, installed in 2003
---	---	Aluminum Die Cast Combustion	EP35		No change in description	New Process, installed in 2003
---	EIS026	Flash Evaporators	EP36	---	No change in description	Not Listed in previous permits

Type of control and efficiency:

Buffing and grinding operations EPs 4 and 5 – Baghouse vents inside building, 80% estimated efficiency; EPs 22 and 23 – Baghouse, 99% estimated efficiency; Spray booths, EPs 6, 7, 8, 9, 10, and 11 – passive air flow filter, 98% estimated efficiency. Chrome plating, EPs 30 and 32 – fume suppressant, 99% estimated efficiency. Flash evaporators, EP 36 – Building enclosure, 70% estimated efficiency.

Air Toxics:

The Division for Air Quality (Division) has performed air dispersion model screening of potentially hazardous substances that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. The following is a summary of the potentially hazardous substances upon which screening was performed, the modeled worst case impacts, and the level of concern (LOC) that triggers additional review and/or more detailed modeling.

Affected Facilities	Pollutant	CAS #	Level of Concern (µg/m3)	Modeled Impact (ug/m3)
Zinc Die Cast	Cadmium Cpds	7440-43-9	0.00056	0.000028
	Hydrochloric Acid	7647-01-0	2	0.1426
	HydroFluoric Acid	7664-39-3	1.4	0.0417
Plating Line	Chromium VI Cpds	18540-29-9	0.000083	0.00122
	Cyanide Cpds	57-12-5	0.3	0.7065
	Nickel Cpds	7440-02-0	0.009	0.1069
	Diethanolamine	111-42-2	0.3	0.0218
	Methanol	67-56-1	400	0.0557
Spray Coating	Ethyl Benzene	100-41-4	100	0.0877
	MIBK	108-10-1	300	0.6770
	Naphthalene	91-20-3	0.029	0.0061
	Toluene	108-88-3	500	0.6219
	Xylene	1330-20-7	10	1.3192

Based on the results of the screening analysis the Division has including testing requirements in the permit for chromium, nickel, and cyanide. Actual emission rates determined by testing will then be used in a refined air dispersion model. Should the predicted concentrations of any of these pollutants exceed the LOC with the refined model, then the source will be required to reduce emissions by accepting practically enforceable permit conditions or by the employment of Toxic Air Pollutant Best Available Control Technology (TAP BACT) to reduce toxic air emissions.

Emission factors and their source:

Emission calculations for combustion activities from EPs 1, 2, 3, 20, 21, 12, 13, 14, 15, 16, 17, 33 and 34, as well as buffing and grinding activities from EPs 4, 5, 22, 23, were based on AP-42. Emission calculations for the remaining emission points were based on material balance.

Applicable regulation:

- 401 KAR 61:015, *Existing Indirect Heat Exchangers*, applicable to affected facilities with a capacity of 250 million British thermal units per hour (mmBtu/hr) heat input or less, and greater than one (1) mmBtu/hr, and constructed before April 9, 1972. This rule applies to EP 1 and EP 2.
- 401 KAR 59:015, *New Indirect Heat Exchangers*, particulate matter and sulfur dioxide emissions limitations apply to affected facilities with a capacity of 250 million Btu/hr heat input or less, and greater than one (1) mmBtu/hr, and constructed after April 9, 1972. This rule applies to EP 3.
- 401 KAR 61:020, *Existing Process Operations*, applies to each affected facility associated with a process operation which is not subject to another emission standard with respect to particulates commenced before July 2, 1975. This rule applies to EPs 4, 5, 12, 13, 14, 15, 16, 17, 24, 25, 26, 27, 28, and 30.
- 401 KAR 59:010, *New Process Operations*, applicable to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975. This rule applies to EPs 6, 7, 8, 9, 10, 11, 22, 23, 31, 32, 33, 34, and 36.
- 401 KAR 63:002 Section (3)(k), incorporating by reference 40 CFR 63 Subpart N, *National Emission Standard for Chromium Emissions from Hard and Decorative Chromium Anodizing Tanks*, applies to decorative chromium electroplating emission points 30 and 32, tanks 29E, 30F, 7F and 8F. The source submitted the initial notification July 24, 1995, the notification of compliance on February 24, 1996 and the Decorative Chromium Electroplating Operations and Maintenance Plan on January 11, 1996. The applicable emission limits, work practice standards, monitoring, recordkeeping and reporting requirements are included in the permit.
- 401 KAR 63:020, Potentially hazardous matter or toxic substances, applies to emissions of chromium, nickel, and cyanide from EPs 24, 28, 30, and 32.

Nonapplicable regulations:

- 401 KAR 63:005, Section 3, incorporating by reference 40 CFR 63, Subpart RRR, *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*, does not apply to this facility. For purposes of 40 CFR 63, Subpart RRR, aluminum die casting facilities, aluminum foundries, and aluminum extrusion facilities are not considered to be secondary aluminum production facilities if the only materials they melt are clean charge, customer returns, or internal scrap, and if they do not operate sweat furnaces, thermal chip dryers, or scrap dryers/delacquering kilns/decoating kilns.
- 401 KAR 59:225, *New Miscellaneous Metal Parts and Products Surface Coating Operations*, does not apply to the metal surface coating line at EPs 6, 7, 8, 9, 10, and 11 because the source is not a major source of volatile organic compounds (VOCs) and is not located in an urban county designated as nonattainment for ozone under 401 KAR 51:010.

401 KAR 59:185, *New Solvent Metal Cleaning Equipment*, does not apply to any metal cleaning activity at this plant since the source is not located in a county or portion of a county which is designated ozone nonattainment, for any nonattainment classification except marginal, under 401 KAR 51:010; nor is this a major source.

40 CFR 63 Subpart T, *National Emission Standards for Halogenated Solvent Cleaning*, does not apply to the source since the source does not operate an affected solvent cleaning machine using a listed halogenated solvent in a total concentration greater than 5 percent by weight.

EMISSION AND OPERATING CAPS DESCRIPTION:

- a. To preclude the applicability of 401 KAR 52:020, *Title V Permits*, the total annual source-wide particulate matter (PM₁₀) emissions shall not exceed the 90 tons per year for each twelve (12) consecutive months. VOC emissions shall not exceed 90 tons for each twelve (12) consecutive months. Individual HAP shall not exceed 9 tons for each twelve (12) consecutive months, and combined HAP shall not exceed 22.5 tons for each twelve (12) consecutive months.
- b. For EPs 30 and 32, pursuant to 40 CFR 63.342(d)(2), if a chemical fume suppressant containing a wetting agent is used, the permittee shall not allow the surface tension of the electroplating or anodizing bath contained within the affected source to exceed 45 dynes/cm (3.1×10^{-3} lbf/ft) as measured by a stalagmometer or 35 dynes/cm (2.4×10^{-3} lbf/ft) as measured by a tensiometer at any time during operation of the tank.

PERIODIC MONITORING:

- a. The permittee shall monitor monthly raw material usages as specified in the permit to demonstrate compliance with all requirements of this permit, including the source-wide PM₁₀ emission limitation specified above.
- b. The particulate filters at EPs 6, 7, 8, 9, 10 and 11 shall be replaced when determined to be inefficient (as determined by visual inspection).
- c. The surface tension at EPs 30 and 32 shall be monitored in accordance with 40 CFR 63.343(c)(5)(ii) and 40 CFR 63.343(c)(5)(iii)

OPERATIONAL FLEXIBILITY:

None

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.